Molecular mimicry shown between Multiple Sclerosis-associated proteins and SARS-2 nucleocapsid

They found overlap of 22 MS-associated proteins!

Jessica Rose
Jan 10

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A paper is hot off the presses, published in Scientific Reports 2 days ago (Jan 8, 2022) entitled: "**Sequence similarity between SARS-CoV-2 nucleocapsid and multiple sclerosis-associated proteins provides insight into viral neuropathogenesis following infection**".[1] Thanks again to David Wiseman for putting this in my email inbox.

I cannot say that I am surprised by this, but people need to know that is paper defines a mechanism of action of 'a prominent pattern of central nervous system (CNS) pathologies, including demyelination' defined by Multiple Sclerosis (MS) in the context of SARS-CoV-2. This mechanism of action is molecular mimicry (of CNS proteins).

Now, it is very important to remember here that these homologous sequences they discovered are for the **nucleocapsid** (**N**) **protein** (and replicase polyprotein1ab[2]) of the SARS-CoV-2 virus, so if the template for the COVID-19 mRNA injectable products encodes the spike protein *alone*, then people can rest assured they won't have molecular mimicry insults due to shared epitopes from the N protein to CNS proteins. At least, based on this paper's results.

MS involves demyelination of nerve cells of the brain and spinal cord and is thought to be the result of immune system dysfunction induced by viral infections, gut dysbiosis, enhanced gut permeability or epigenetic triggers - all which can lead to autoimmunity against the myelin sheath and central nervous system (CNS) proteins.[3][4][5] Molecular mimicry is implicated in the development of autoimmune diseases[6][7] and is linked to vaccines as well and thus, this is very important to think about - especially these days.[8] I hadn't realized that the mechanistic role of molecular mimicry in autoimmunity was a point of contention, but apparently, it is.

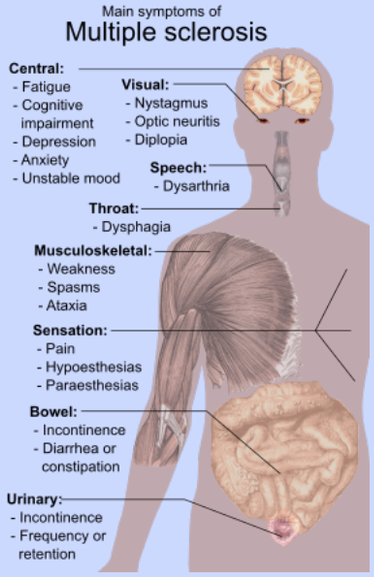


Figure 1: Where MS affects the human, clinically. https://en.wikipedia.org/wiki/Multiple_sclerosis

MS is quite common in the U.S. and affects ~3M people world-wide. [9] The authors in this recently published paper appear to have identified shared sequences between the SARS-CoV-2 N protein and CNS proteins that that can result in MS manifestation post SARS-CoV-2 exposure. They used a robust new computational tool called PEPmatch [10] to assess homology and demonstrated that SARS-CoV-2 may be associated with the development of MS via molecular mimicry of CNS proteins. (I am currently checking this PEPmatch bioinformatics tool out. Apparently a manuscript is in progress. You can access the Github here.)

The authors write:

> Central to the theory of molecular mimicry is the degenerative nature of both T cells and MHC binding, in which multiple peptides can bind to the same MHC, and in turn multiple peptide:MHC combinations can be recognized by the same T cell Receptor (TCR).

This so-called degeneration of T cells is driven by an induced 'flexibility' of T cells (their receptors) to recognize more than one antigenic epitope. [11] Kind of like the Blanche Devereaux's of the T cell receptor world - not so choosy in their 'binding partner'.

I have written about molecular mimicry in the context of SARS-CoV-2 previously and you can read about that here. So, I won't go into detail on it now, but instead refer everyone to the following schematic that describes molecular mimicry as the causative mechanism for autoimmunity in rheumatic heart disease. [12] Even though the guys at Johns Hopkins have this blurb and schematic on their site, they still seem skeptical about molecular mimicry being behind autoimmunity. In any case, thanks guys. It's a nice schematic.

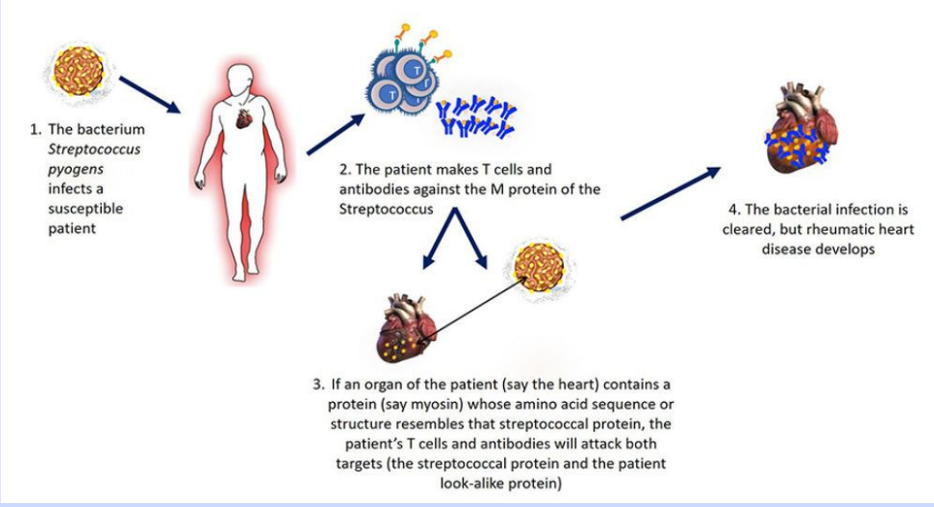


Figure 2: Accidental cross reactivity of myosin and streptococcal M proteins T and B cells. https://pathology.jhu.edu/autoimmune/causes/

So you guys get it right? Self-directed cross-reactivity is not good.

I want to make an important distinction here regarding any conversation about SARS-CoV-2 spike, especially in the mRNA injection context. The thing that people are talking about with regard to injection-related spike embedded cell destruction, is not autoimmunity. It is the immune system working properly to clear cells with destroy-me flags on their surfaces. These 'destroy-me' flags are the (spike) peptides proudly displayed on cell surfaces by MHC molecules or can even be the spike embedded directly in the cell membrane. When a T or a B cell, for example, sees these flags, they do like Daleks: exterminate. EXTERMINATE! This is bad - by the way - for those cells. Every cell that gets embedded with the now known to be circulating spike is set for destruction by the immune system just doing its job. This is why it's a bad thing when spike embeds epithelial cells lining blood vessels, cells that line capillaries in the brain and myocardial cells, to name a few places it's been found to be embedded.

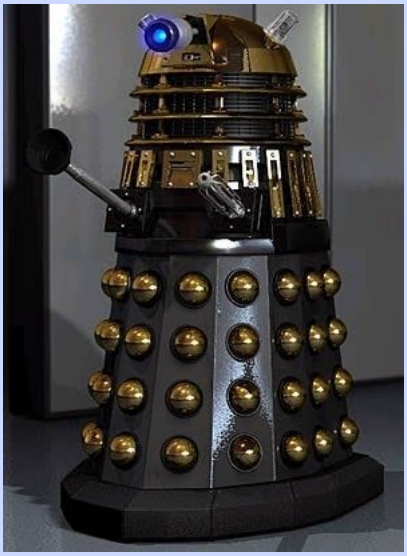


Figure 3: Dalek. https://dalekssayexterminate.blogspot.com

The idea behind autoimmunity development in the context of molecular mimicry is based on the development of these same T and B cells (and antibodies) as part of a normal immune response to foreign antigens. But, 'by accident', they can also potentially bind to and 'act on' epitopes that may *not* be the proteins of SARS-CoV-2 and, yes, that definitely includes the spike protein.

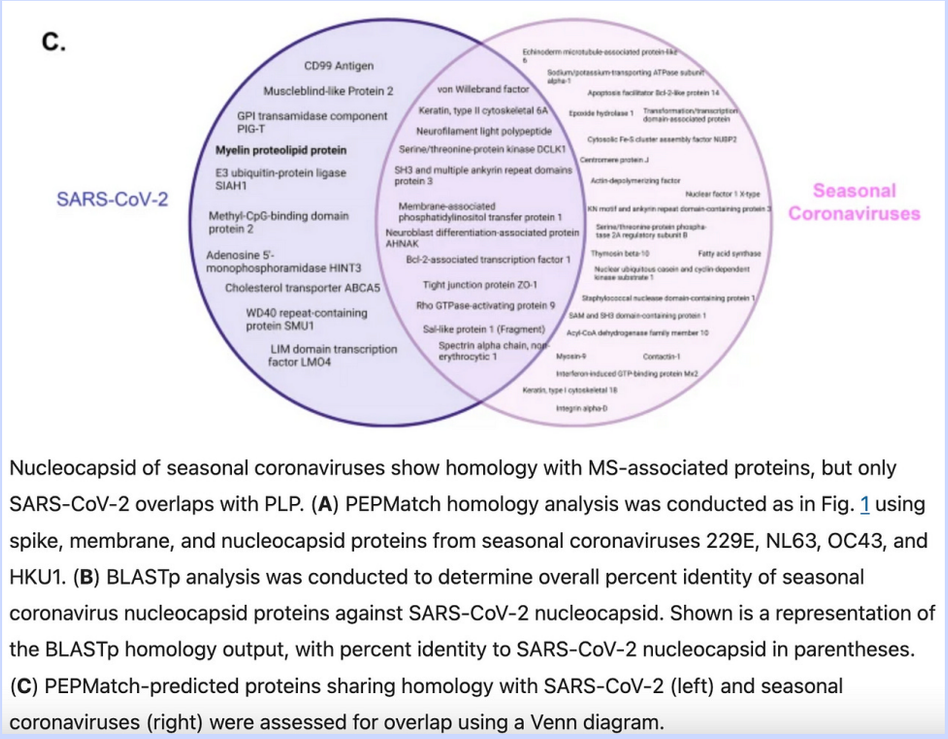
Autoimmunity itself involves loss of immunological tolerance that occurs when there is a failure of immune cells to recognize self antigens as 'self'. This occurs somewhere during the process of tolerization in the thymus and the bone marrow that I describe here.

Autoimmunity as a whole describes an immunological attack on self proteins.

So to repeat - in the context of spike protein - the molecular mimicry aspect of autoimmunity relies on the well-established immunological concept that there are antigenic epitopes in the spike protein whereby through detection of spike as a foreign protein by the immune system, spike-specific T and B cells are produced en masse to fend off said foreign protein as part of an elaborate defense system. But accidentally, these T and B cells (and antibodies) also 'establish' the ability to bind *other* epitopes that kind of '*look right*' (how you doin'?). These other epitopes might be found on your own proteins - as in, self proteins! Ouchie. What if those proteins were CNS proteins?

Back to the paper.

Scarily, the authors found a *higher degree of peptide similarity* between SARS-CoV-2 N and MS-associated proteins, than for 3 out of 4 seasonal coronaviruses that also had significant peptide similarities. This means, that yet again, something is 'special' about SARS-CoV-2 in this regard - myelin proteolipid protein (PLP) significantly overlapped *only* with the N protein of SARS-CoV-2: this might make the difference pathologically. Myelin proteolipid protein (PLP) is implicated in the development of MS, by the way. [13] [14] [15] [16]



Nucleocapsid of seasonal coronaviruses show homology with MS-associated proteins, but only SARS-CoV-2 overlaps with PLP. (**A**) PEPMatch homology analysis was conducted as in Fig. 1 using spike, membrane, and nucleocapsid proteins from seasonal coronaviruses 229E, NL63, OC43, and HKU1. (**B**) BLASTp analysis was conducted to determine overall percent identity of seasonal coronavirus nucleocapsid proteins against SARS-CoV-2 nucleocapsid. Shown is a representation of the BLASTp homology output, with percent identity to SARS-CoV-2 nucleocapsid in parentheses. (**C**) PEPMatch-predicted proteins sharing homology with SARS-CoV-2 (left) and seasonal coronaviruses (right) were assessed for overlap using a Venn diagram.

Figure 4: Nucleocapsid of seasonal coronaviruses show homology with MS-associated proteins, but only SARS-CoV-2 overlaps with PLP. https://pubmed.ncbi.nlm.nih.gov/36617594/

I had to shown this diagram from Figure 4 in the paper because I just love Venn Diagrams. Lots of other interesting proteins in there. They write:

> We asked whether any of these proteins [driving immune responses in individuals recovering from SARS-CoV-2] shared significant homology with MS-associated neuro-antigens - an observation which would fortify the proposed case for molecular mimicry in the development of MS following SARS-CoV-2 infection. Interestingly, both the 9mer and 15mer groups (representing MHC I and II, respectively) from nucleocapsid showed significant sequence overlap with MS-associated proteins, in contrast to most of the other proteins tested in our analysis.

So indeed, there's a case for molecular mimicry as the culprit here for development of MS via autoimmunity and it is SARS-nCoV-2-related. This only applies to the N protein, and somewhat to the replicase polyprotein1ab, for now.

I might write up "**Lack of evidence of significant homology of SARS-CoV-2 spike sequences to myocarditis-associated antigens**" tomorrow. It's a paper that also came out recently with the guy who seems to be responsible for the PEPmatch bioinformatics tool, as first author. Seems like an interesting paper from quick scan.

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12 https://pathology.jhu.edu/autoimmune/causes/

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Deb Hawthorne Jan 10 Liked by Jessica Rose

Christina Applegate recently diagnosed with MS. Gotta wonder. People who were once healthy suddenly diagnosed with a disease. My thought has always been that these shots speed up anything that may be going on in one's body already. It will be near impossible to blame these sudden onsets of diseases on the shots. They knew this when they created these bioweapons. They are even able to hide the obvious ones like we saw with Damar. My guess is that will say he had some cardio defect no one knew about that he was born with. It went undetected. Recently a young women died who had previously had her spleen removed due to a car accident and her sudden death became the result of a type of infection due to having no Spleen. They can make up anything for these sudden deaths. And they are!!

42 Reply Collapse •••

5 replies by Jessica Rose and others

Curt Sanders Writes Curt's Newsletter Jan 10 Liked by Jessica Rose

Thank you Jessica for another intriguing article.. it would be interesting to see a chart tracking the last 20 years increase in autoimmune disorders overlapped by one tracking the increase in vaccinations over same.. and a chart tracking the increase in pesticide, herbicide, fungicide use over 20 and one tracking the increase in all new Industrial chemicals over same.. and then last but not least the increase in EMFs over 20.. I bet the numbers would be daunting.. Our poor Immune system is under one hell of a siege.. Time to go as Organic as possible and back to Nature

Keep up your extraordinary work! You a Bad Rad Momma!

19 Reply Collapse •••

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This is one of the emails I received the other day. I get hundreds daily, and I am hearing you all.

This particular note spoke loudly to me and this lovely person gave me permission to share her words.

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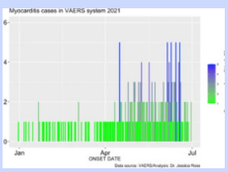

A Report on Myocarditis Adverse Events in the U.S. Vaccine Adverse Events Reporting System (VAERS) in Association with COVID-19 Injectable...

Jessica Rose PhD, MSc, BSc and Peter A. McCullough MD, MPH

JESSICA ROSE NOV 2, 2021 1,249 146

Rewrite: Let's tag team this until everybody understands

The modified spike protein is dangerous and for very specific reasons.

JESSICA ROSE JUN 13, 2022 684 140

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